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IS : 6204-1971

*Indian Standard*  
SPECIFICATION FOR  
CAST OPEN ROLLER FAIRLEADS

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
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# Indian Standard

## SPECIFICATION FOR CAST OPEN ROLLER FAIRLEADS

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# *Indian Standard*

## SPECIFICATION FOR CAST OPEN ROLLER FAIRLEADS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 28 July 1971, after the draft finalized by the Shipbuilding Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

**0.2** Cast roller fairleads are used on board ships for mooring of vessel and for such other purposes. The safe working load of cast rollers is based on the admissible breaking load of ropes specified by the competent authority under whose rules the vessel is constructed.

**0.3** In the preparation of this standard, assistance has been derived from DIN 81905 'Roller fairleads' issued by Deutscher Normenausschuss.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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### 1. SCOPE

**1.1** This standard specifies the material and dimensions for cast open roller fairleads.

### 2. TERMINOLOGY

**2.0** For the purpose of this standard, the following nomenclature and definitions shall apply.

**2.1 Nomenclature**—The nomenclature of the fairleads shall be as shown in figure in Table 1.

**2.2 Nominal Size** — The nominal size of the cast roller is the safe working load in tonnes of the roller.

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\*Rules for rounding off numerical values (*revised*).

**2.3 Nominal Diameter** — The nominal diameter of the roller is the minimum diameter  $d_1$  as shown in figure in Table 1.

### 3. MATERIAL

**3.1** The material used for the various parts of cast open roller fairleads shall be as shown below:

<i>Sl No.</i>	<i>Name of Part</i>	<i>Material</i>	<i>Material Conforming to</i>
i)	Roller for nominal sizes 1 to 12	Grade 15 cast iron	IS: 210-1962*
	Roller for nominal sizes 20 and 32	Cast steel	IS: 1030-1962† IS: 2985-1964‡
ii)	Pivot pin	Steel	IS: 2073-1962§
iii)	Top bearing bush	Bronze	IS: 306-1968
iv)	Bottom bearing bush		
v)	Cover	Mild steel	IS: 3747-1966¶
vi)	Washer	Steel	IS: 2016-1967**
vii)	Hexagon screw, nut and countersunk head screw	Steel	IS: 1367-1967††
viii)	Eye bolt	Steel	IS: 4190-1967‡‡

### 4. DIMENSIONS

**4.1** The main dimensions of fairleads shall be as given in Table 1.

\*Specification for grey iron castings (*revised*).

†Specification for steel castings for general engineering purposes (*revised*).

‡Specification for steel castings for ship's structure.

§Specification for carbon steel bars for production of machined parts for general engineering purposes.

||Specification for tin bronze ingots and castings (*second revision*).

¶Specification for steel for flanging and pressing.

\*\*Specification for plain washers (*first revision*).

††Technical supply conditions for threaded fasteners (*first revision*).

‡‡Specification for eye bolts with collars.



**4.2** The dimensions for the various parts of the cast open roller fairleads shall be as shown below:

<i>Sl No.</i>	<i>Name of Part</i>	<i>Reference to</i>
i)	Roller	Table 2
ii)	Pivot pin	Table 3
iii)	Cover	Table 4
iv)	Washer	IS : 2016-1967*
v)	Hexagon nut	IS : 1363-1967†
		IS : 3138-1965‡
vi)	Slotted countersunk head screw	IS : 1365-1968§
vii)	Countersinks and counter bores	IS : 3406-1966
viii)	Eye bolt	IS : 4190-1967¶

**4.3** Recommended dimensions for attachment of cast open roller fairleads to deck are shown in Table 5.

## 5. TOLERANCES

**5.1** The tolerance in millimetre on dimensions of grey cast iron roller shall conform to IS : 5519-1969\*\*.

**5.2** The tolerance in millimetre on dimensions of cast steel rollers shall conform to IS : 4897-1968††.

**5.3** The tolerances on the dimensions of machined parts where they have not been specified in this standard shall be of coarse deviation according to IS : 2102-1969‡‡.

## 6. DESIGNATION

**6.1** Cast open roller fairleads shall be designated by the nominal size, material and the number of standard.

\*Specification for plain washers (*first revision*).

†Specification for black hexagon bolts, nuts and lock nuts (dia 6 to 39 mm) and black hexagon screws (dia 6 to 24 mm) (*first revision*).

‡Specification for hexagonal bolts and nuts (M42 to M150).

§Specification for slotted countersunk head and slotted raised countersunk head screws (dia range 1.6 to 20 mm) (*second revision*).

||Dimensions for countersinks and counterbores.

¶Specification for eyebolts with collars.

\*\*Deviations for untoleranced dimensions of grey iron castings.

††Deviations for untoleranced dimensions and weight of steel castings.

‡‡Allowable deviations for dimensions without specified tolerance (*first revision*).

*Example:*

Open roller fairlead of nominal size 3 of cast iron shall be designated as:

Open Roller Fairlead 3 CI IS : 6204

## **7. GENERAL REQUIREMENTS**

**7.1** The cast open roller fairleads shall be reasonably free from casting defects such as blow holes.

**7.2** The surface finish shall be 12.5 to 30 microns assessed according to IS : 3073-1967\*.

**7.3** Lubrication of the top and bottom bushes shall be as shown in figure in Table 2.

**7.3.1** The oil grooves on the bottom face of the bottom bush shall not extend beyond  $2/3$  width of the face of the bush from the inner edge.

## **8. MARKING**

**8.1** Cast open roller fairleads shall be marked with their designation on the underside of the roller.

**8.1.1** Cast open roller fairleads may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

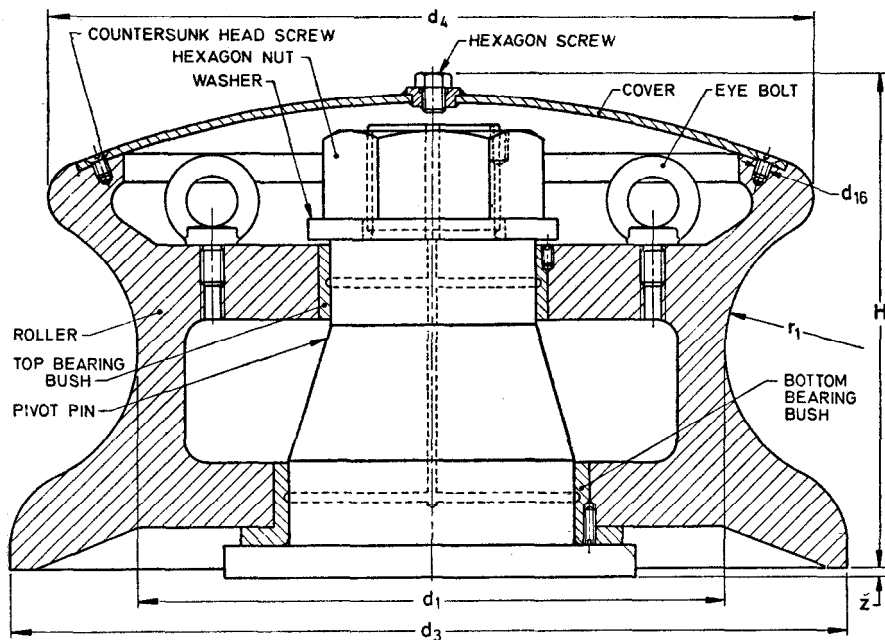
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\*Assessment of surface roughness.

TABLE 1 MAIN DIMENSIONS FOR FAIRLEADS

(Clauses 2.1, 2.3 and 4.1)

All dimensions in millimetres.

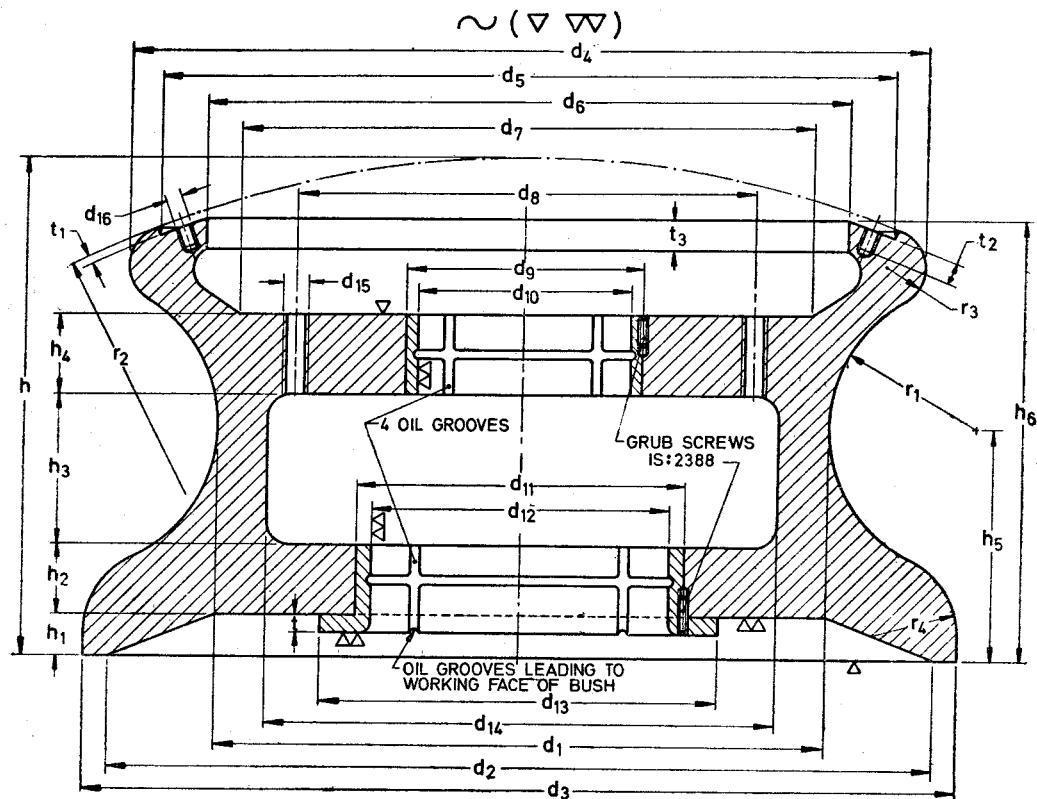


NOMINAL SIZE	$d_1$ $+1$ $0$	$d_3$	$d_4$	COUNTERSUNK HEAD SCREW $d_{16} \times \text{Length}$	$H$ APPROX	$r_1$	$z$
1	100	150	130	M6 $\times$ 10	105	22	3
2	125	190	170	M6 $\times$ 10	135	32	3
3	160	240	215	M6 $\times$ 10	165	42	3
5	200	300	270	M6 $\times$ 10	205	55	4
8	250	380	340	M8 $\times$ 12	255	73	4
12	320	480	430	M8 $\times$ 12	315	95	6
20	400	570	520	M10 $\times$ 16	340	95	6
32	500	680	630	M10 $\times$ 16	365	95	8

**TABLE 2 DIMENSIONS FOR ROLLERS**

(Clauses 4.2 and 7.3)

All dimensions in millimetres.



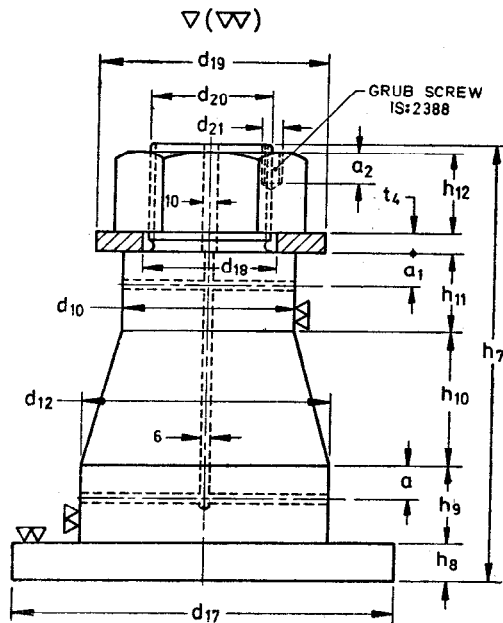
NOMINAL SIZE	$d_1$ $+ \frac{1}{10}$	$d_2$	$d_3$	$d_4$	$d_5$	$d_6$	$d_7$	$d_8$	$d_9$ H7/r6	$d_{10}$ E9	$d_{11}$ H7/r6	$d_{12}$ E9	$d_{13}$	$d_{14}$ $- \frac{1}{10}$	$d_{15}$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1	100	130	150	130	115	85	75	—	42	35	58	50	75	70	—
2	125	170	190	170	150	110	100	—	56	48	82	70	100	90	—
3	160	215	240	215	190	150	135	—	72	60	100	85	120	120	—
5	200	270	300	270	240	200	175	—	90	75	120	105	145	155	—
8	250	350	380	340	310	260	230	—	105	90	145	130	180	200	—
12	320	450	480	430	400	350	300	246	130	115	180	160	220	265	M12
20	400	540	570	520	480	420	375	300	155	140	215	195	260	335	M16
32	500	650	680	630	580	520	470	365	180	160	260	230	310	430	M20

$d_{15}$	$h$ APPROX	$h_1$	$h_2$ $- \frac{1}{10}$	$h_3$	$h_4$ $- \frac{1}{10}$	$h_5$	$h_6$	$r_1$	$r_2$	$r_3$	$r_4$	$t$	$t_1$	$t_2$	$t_3$
(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
M6	90	12	14	14	14	40	82	22	125	9	18	5	4	10	13
M6	120	15	18	25	19	53	109	32	180	11	23	6	4	10	13
M6	150	17	22	40	22	68	134	42	230	12	28	8	4	10	15
M6	190	19	25	58	28	85	169	55	290	16	33	8	4	10	15
M8	239	24	30	78	35	110	213	73	380	18	39	8	5	12	15
M8	300	26	37	107	42	136	263	95	480	21	46	12	5	12	15
M10	325	28	45	98	52	150	285	95	660	25	55	12	6	16	20
M10	350	35	55	85	65	160	306	95	900	32	65	15	6	16	20

TABLE 3 DIMENSIONS FOR PIVOT PIN

( Clause 4.2 )

All dimensions in millimetres.

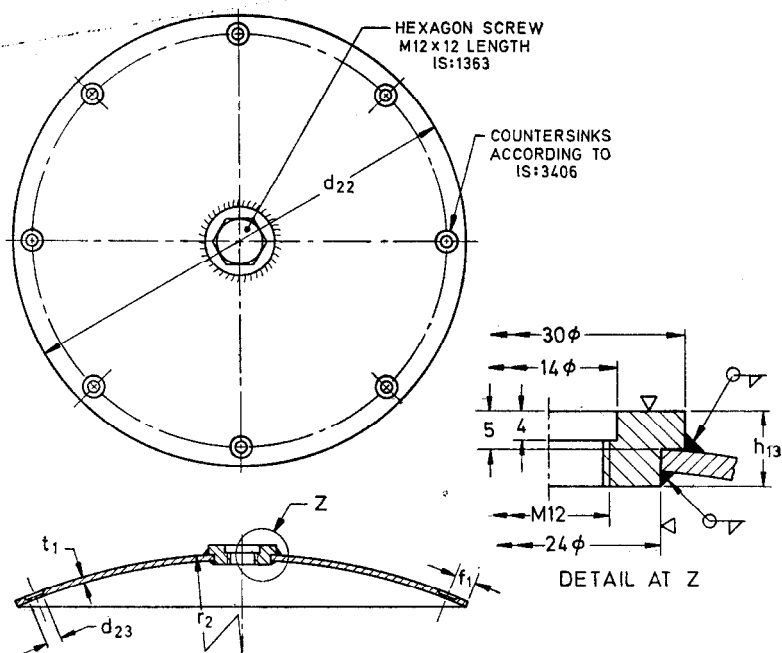


NOMINAL SIZE	$a$	$a_1$	$a_2$	$d_{10}$ h9	$d_{12}$ h9	$d_{17}$	$d_{18}$	$d_{19}$	$d_{20}$	$d_{21}$	$h_7$	$h_8$	$h_9$ $+\frac{1}{0}$	$h_{10}$	$h_{11}$ $+\frac{1}{0}$	$h_{12}$	$t_4$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
1	8	8	10	35	50	90	26	50	M24	M6	85	10	20	10	19	19	5
2	10	10	10	48	70	125	36	65	M33	M6	115	12	25	19	26	26	6
3	12	12	10	60	85	140	42	85	M39	M8	145	12	31	36	28	31	6
5	14	15	12	75	105	165	52	105	M48	M8	185	15	35	53	35	38	8
8	17	18	16	90	130	200	70	120	M64	M10	230	20	40	70	45	42	10
12	18	22	20	115	160	240	86	145	M80 × 6	M12	285	20	50	102	50	50	12
20	24	30	20	140	195	280	96	170	M90 × 6	M12	310	22	58	92	61	60	14
32	30	35	25	160	230	340	116	200	M110 × 6	M16	340	28	70	80	75	70	16

TABLE 4 DIMENSIONS FOR COVER

( Clause 4.2 )

All dimensions in millimetres.

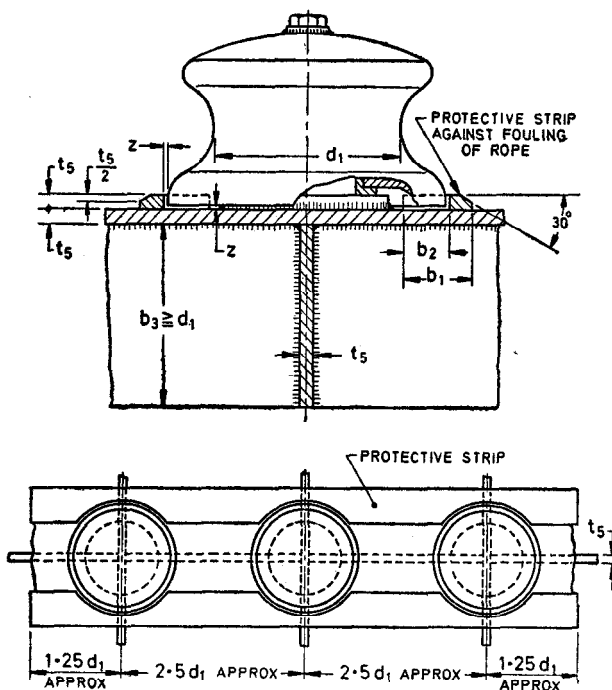


NOMINAL SIZE	$d_{22}$	$d_{23}$	$f_1$	$h_{13}$	$r_2$	$t_1$	NO. OF HOLES FOR SCREW
1	114	6.4	10	10	125	4	6
2	149	6.4	10	10	180	4	6
3	189	6.4	10	10	230	4	6
5	239	6.4	10	10	290	4	8
8	309	8.4	12	13	380	5	8
12	399	8.4	12	13	480	5	10
20	479	10.5	15	13	660	6	12
32	579	10.5	16	13	900	6	12



**TABLE 5 RECOMMENDED METHOD OF ATTACHMENT TO DECK AND RELATED DIMENSIONS**

( Clause 4.3 )

**3 ROLLER ARRANGEMENT**

All dimensions in millimetres.

NOMINAL SIZE	$b_1$	$b_2$	$d_1$	$t_5$ Min	$z$
1	50	33	100	8	3
2	60	40	125	10	3
3	60	40	160	13	3
5	70	47	200	13	4
8	80	53	250	16	4
12	80	53	320	16	6
20	90	60	400	20	6
32	90	60	500	20	8

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